Wolfsburg, Germany Autostadt

Opto 22 SNAP Ethernet I/O Improves
Facilities Management at German Auto Mall

Introduction

A recent trend in automotive retail has seen the establishment of auto malls, a collection of several different dealerships in one central location. Among other benefits this provides is convenience for customers when comparison shopping. Not just popular in the US, the emergence of auto malls is also prevalent in western Europe, where several major car makers such as Volkswagen, Mercedes, and Volvo have their global headquarters. In July 2000, the Autostadt ("Car City") opened near Wolfsburg, Germany. The idea was to have a small city where customers and visitors could come to shop, have fun, learn, and, of course, buy cars.

Far exceeding what most think of as an auto mall, besides dealerships, the family-oriented Autostadt has shops, restaurants, even a Ritz-Carlton Hotel, all set amongst beautiful rolling hills, lakes, bridges, and waterways. There are also many fun and educational attractions. The Time House is a museum that traces the history of automobility since 1886, while the Autolab demonstrates the design, engineering, and assembly processes of the automobile manufacturer. There's also KidsArt, a learning park with areas for children to paint and draw, and a children's traffic school. Autostadt even has special events like soccer tournaments, music festivals, and open air movies under the stars.

Of course, the Autostadt is also a place of business and one of the best places in Germany to visit when shopping for an automobile. As such, there are dealerships, corporate offices, storerooms and other facilities for Volkswagen, Audi, Lamborghini, Bentley, Seat, and Skoda. All of the Autostadt facilities—educational, recreational, and commercial—need to be maintained to ensure smooth and continuous operation. Many systems and technologies have been deployed at Autostadt for this purpose but few have proved as valuable as Opto 22's SNAP Ethernet I/O system.

The Integrator: SKN GmbH

SKN Systems GmbH is a German IT and automation solutions provider. The company specializes in facilities management software and hardware for building control and monitoring of security, lighting, HVAC, elevator, and maintenance systems. For this purpose, SKN has been building and installing Opto 22-based systems for more than 5 years. The company often combines the Opto 22 hardware with special software for facilities management, security and other applications.

For the Wolfsburg Autostadt, SKN designed and planned an Opto 22 hardware integration project, combining Opto 22 remote monitoring, control, and data acquisition systems with the Windows based Prisma software. "We wanted to use Ethernet-based hardware due to the fact that there was already an existing Ethernet network in

Figure 1: The Wolfsburg . Germany Autostadt

the Autostadt buildings, says Martin Heckmann, Manager of SKN Systems. "We determined that Opto 22's plug-and-play SNAP Ethernet I/O system offered an effective method to gather information from many different buildings, and its SNMP communication capabilities would enable it to send event-based traps whenever and wherever needed."

The Solution: Remote Monitoring and Control Execution

SKN has installed more than two dozen Opto 22 SNAP Ethernet I/O systems in the Autostadt buildings. Within these buildings, sensor technology, such as pressure differential flowmeters installed in gas pipes to detect leaks, is used to monitor facility systems and equipment. These sensors are connected to and communi-cate with the Opto 22 Ethernet I/O system via digital input modules on the I/O rack, thereby allowing the system to monitor critical conditions in each building.

Other sensor technology utilized includes float and contact sensors installed in building basements to detect rising water and prevent flooding. Again, SNAP Ethernet I/O receives this information as simple digital—on/off or positive/negative state—signals. Having a system monitoring the Autostadt buildings this way prevents damage that might otherwise occur if a hazardous condition went undetected and also reduces Autostadt management's insurance premiums and liability for Autostadt visitors who might be injured as a result of these hazardous conditions.

The SNAP Ethernet I/O system sends all data to the customized Prisma facilities management and security software databases at an Autostadt central operations control station. SKN developed and implemented a special driver

Figure 2: The Volkswagen Building

that allows the Opto 22 equipment to speak directly to this software. "One of the reasons we selected Opto 22 SNAP Ethernet products for this project was because they're based on open standards and support many protocols," states Heckmann. "They are also easily configured and come with an excellent programming guide. All this made it very easy for us to develop a custom driver using IEEE1394."

SNAP Ethernet I/O also enables remote monitoring of Autostadt restroom facilities. Throughout the Autostadt, the men's and women's bathrooms are equipped with alarm buttons should a toilet become disabled or other emergency situation occur. When activated, the alarm system sends an alert to the SNAP Ethernet system, which then generates and communicates back to the Prisma software at the control station. Once this alarm is received from the SNAP Ethernet system, a maintenance technician is immediately dispatched to correct the problem.

Finally, Opto 22 SNAP Ethernet I/O was enlisted to monitor the server rooms in each building of the Autostadt. These rooms house the servers that store files and manage the PCs, printers, fax machines, and other equipment on various computer networks. In these rooms, SNAP Ethernet I/O is connected to the access control system and smoke detection equipment. Through digital input modules on the SNAP rack, the system can detect room entry. The system then sends alarms to the control station if that access is occurring during an unauthorized time period. The SNAP Ethernet system can even send digital output signals to lock and unlock the server room doors remotely, providing convenience for service technicians who made need access for reboots, repairs, or other reasons.

Looking Forward

All tolled, SKN Systems has deployed about 30 SNAP Ethernet I/O systems, allowing control and monitoring of more than 500 I/O points (conditions) at Wolfsburg Autostadt. Right now, Autostadt is utilizing about half of this capacity and counting on the SNAP Ethernet I/O system's modularity and ability to grow if and when SKN is enlisted to provide remote supervision or control of additional equipment. "It's great for us to have a system where we know we can add new points anytime we want. These particular systems can handle up to 32 each," attests Heckmann.

Autostadt management and SKN are currently in the process of analyzing Autostadt operations and determining other types of equipment that can be monitored and/or controlled with SNAP Ethernet I/O. One future application that's likely involves analog temperature monitoring of individual server cabinets in the aforementioned server rooms. Continuous monitoring of this sort would help guard against network crashes that could cripple Autostadt business operations. "When we began this project for Autostadt, the customer had thoughts of using a multiplexor or some similar device to accomplish this," claims Heckmann. "But unlike the Opto 22 system, the multiplexor was not able to receive analog signals. When we explained what's possible with an intelligent system like SNAP Ethernet I/O—temperature and humidity monitoring, for example—the customer was sold."
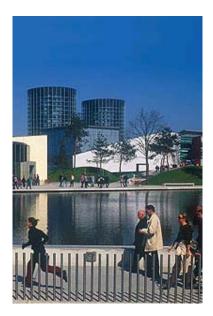
*Figure 3:
At Autostadt, taking ownership of your new car is an event in itself. In a fully automated procedure, your car is brought down to you from a 20-story car tower.*

About Opto 22

Opto 22 manufactures and develops hardware and software products for applications in industrial automation, remote monitoring, and enterprise data acquisition. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's SNAP systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, or electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel. Founded in 1974 and with over 80 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability. Opto 22 products are sold through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-OPTO or visit our Web site at www.opto22.com.